Topic test | Probability

Probability - Practice test 2

Name: _____ Date: _____

16 questions | 45 marks | 60 minutes

Compare models, tables and dependent events.

A scientific calculator may be used.

1. A spinner has P(A)=1/2, P(B)=1/3 and P(C)=1/6. Find P(not C). [2 marks]

2. A spinner has P(A)=1/2, P(B)=1/3 and P(C)=1/6. It is spun twice independently. Find P(the same letter twice). [3 marks]

3. A cafe offers 2 vegetarian mains and 3 other mains, each with 3 drinks. How many vegetarian-main-and-drink choices are there? [2 marks]

4. Using digits 1,2,3,4 once each, how many four-digit numbers are even? [3 marks]

5. How many distinct arrangements of AABC are there? Explain the overcount. [3 marks]

6. Seven students form an unordered pair. How many pairs? [3 marks]

7. A number is chosen uniformly from 1-10. Given that it is even, find the probability it is greater than 5. [2 marks]

8. Using the club table, find P(not music|drama). [2 marks]

Invented membership data for 60 students.

Music membership	Drama	Not drama	Total
Music	8	12	20
Not music	10	30	40
Total	18	42	60

9. A group has 30 girls and 20 boys. Nine girls and six boys wear glasses. [4 marks]

(a) Find P(girl|glasses). [2 marks]

(b) Are girl and glasses independent in this data? [2 marks]

10. A bag has 4 green and 3 yellow counters. Draw two without replacement. Find P(one of each colour). [3 marks]

11. A bag contains 4 green and 3 yellow counters. Draw twice at random without replacement. Find P(second green|first yellow). [2 marks]

12. P(A)=0.6, P(B)=0.4, P(A|B)=0.75. [4 marks]

(a) Find P(A and B). [2 marks]

(b) Find P(A or B). [2 marks]

13. A tree has first-stage P(A)=0.7 and P(not A)=0.3. Given A, P(B)=0.2; given not A, P(B)=0.6. Find P(B). [3 marks]

14. A simulation records 95 events in 400 trials. Estimate the probability. [2 marks]

15. A fair coin has landed head five times. Under the independent-toss model, find the next-tail probability and explain. [3 marks]

16. In an invented scanner trial,20 unreadable labels are flagged and 5 are not. Of 975 readable labels,80 are flagged. [4 marks]

(a) Find P(unreadable|flagged). [2 marks]

(b) Find P(flagged|unreadable). [2 marks]